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KENYON & KENYON LLP
ONE BROADWAY
NEW YORK, NY 10004

EXAMINER	
EMPIE, NATHAN H	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/580,891	ALBRECHT ET AL.	
	Examiner	Art Unit	
	NATHAN H. EMPIE	1712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 June 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *15-33* is/are pending in the application.

4a) Of the above claim(s) *30 and 31* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *15-29 and 32-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Examiner acknowledges receipt of 6/10/10 amendment to the claims which was entered into the file. Claims 30 and 31 have been previously withdrawn, claims 15-29 and 32-33 are currently pending examination.

Election/Restrictions

This application contains claims 30 and 31 drawn to an invention nonelected with traverse in the reply filed on 1/27/10. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 33 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 33 is dependant on claim 23 which depends from claim 15. Claim 15 limits the metal powder to one of two alternatives: (a) jacketed powder cores, or (b) metal powder alloy. Claim 23 specifically requires the (b) alternative, so the limitation of claim 33: "...the jacketing of the powder cores formed from pure nickel." would be limiting the (a) alternative contrary to what claim 23 has required, generating a level of confusion as to how the metal powder can be both (a) and (b) when they are presented as alternatives. For purposes of examination, claim 33 will be examined as written.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 15 -19, 23-25, 27-29, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over McMordie et al (US patent 5,650,235; hereafter McMordie) in view of Alperine et al (US patent 6,183,888; hereafter Alperine).

3. Claims 15, 16, 23 and 29: McMordie teaches a method of enhancing the oxidation and corrosion resistance of superalloy substrates which includes enriching the surface of the superalloy substrate with platinum and subsequently aluminizing the platinum enhanced superalloy substrate (See, for example, abstract). McMordie has taught the substrates intended to receive the protective coatings are superalloys such as nickel based and cobalt based superalloys for service in gas turbine engines (See, for example, col 1 lines 1 - 57). McMordie further teaches making available a slip material that includes at least one metal powder, the metal powder including up to at least 25 wt % of at least one metal of the platinum group formed of a metal powder alloy that includes the at least one metal of the platinum group (see, for example, preparing the platinum based coating via a slurry comprising a platinum-rich alloy powder (see, for example, col 7 lines 21 – 28; wherein the examiner interprets "platinum rich" to be >50wt%).

4. McMordie further teaches that applying the slip material at least from area to area onto the component part while forming a slip layer (see, for example, col 7 lines 20 - 28, wherein the platinum containing coating is formed by slurry deposition onto the substrate),

5. curing an drying the slip layer and heat treating the component part that is coated with the slip material at least from area to area to diffuse the slip layer into the component part (see, for example, wherein the deposited platinum layer is taught to commonly be exposed to heat at above about 1000^{o}C for about 20 min, col 7 lines 17 – 28, wherein the examiner asserts that the temperature and times involved in this heat treatment process would be sufficient to cure and dry the slip layer).

6. McMordie has not explicitly taught incorporating a binder into the platinum rich alloy coating slurry, but McMordie has taught binders as conventional components of slurries with regard to other coating systems, and has even provided a number of preferred binder species to be used due to their beneficial properties (see, for example, col 7 line 29 - 40, and col 8 lines 28 - 59). Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated a binder into the platinum rich alloy coating slurry of McMordie since binders are common rheology and strength altering additives in slurry systems and they are well recognized to be included into slurry coatings by McMordie.

7. McMordie has taught nickel based superalloy substrates (see, for example, abstract) and has broadly taught the metal powder as a platinum-rich alloy (see, for example, col 7 lines 22-28), but is silent as to the other alloying element(s) involved in

the platinum-rich alloy. So McMordie does not explicitly teach the metal powder alloy that further includes at least one material having the same base metal as the metal-based alloy. When a primary reference is silent as to a certain detail, one of ordinary skill would be motivated to consult a secondary reference which satisfies the deficiencies of the primary reference. Alperine teaches a method for improving the oxidation and corrosion resistance for superalloy substrates used in high temperature turbine applications (see, for example, abstract, col 1 lines 1 – 37); which involves enriching the surface of the superalloy substrate with platinum, via a platinum alloy, and aluminizing the platinum enhanced superalloy substrate (see, for example, col 4 lines 30 – 63, and col 5 lines 1 – 10). Alperine teaches wherein the platinum group alloy for achieving platinum enhancement is predictably a platinum group - nickel alloy (such as palladium-nickel alloy) (see, for example, col 6 lines 64 - 67) or can be achieved by alloying a platinum group metal with an MCrAlY alloy (see, for example, col 7 line 57 - col 8 line 13; wherein M is the base metal such as Ni, Co, or Fe). Alperine further teaches wherein platinum group metal, palladium is known in the art to similarly reap the benefits achieved by platinum with respect to high temperature oxidation and corrosion resistance (see, for example, col 2 lines 38 – 40). As both McMordie and Alperine have taught methods of enhancing the oxidation and corrosion resistance of superalloy substrates which includes enriching the surface of the superalloy substrate with platinum and aluminizing the platinum enhanced superalloy substrate, it would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated platinum group-nickel alloys (such as Pt-Ni or Pd-Ni) or platinum group –

MCrAlY alloys (wherein M is Ni, Co, or Fe) as such platinum rich alloys would achieve the predictable result of enhancing the substrate with a platinum group element to enhance oxidation and corrosion resistance.

8. Claim 17: McMordie in view of Alperine have taught the method of claim 15 (above) wherein the metal powder is taught as the "(b)" alternative (a Pt-group metal alloy with metal based element alloy), as claim 15 lists the two in the alternative only, and this dependant claim has not explicitly required the “a” alternative, then the claim as written directed to the type of cores would only further limit the "a" path, so rejections made according to the "b" path of claim 15 would satisfy the limitations of claim 17.

9. Claim 18 and 33: McMordie in view of Alperine have taught the method of claim 15/23 (described above), wherein a Pt-group metal is alloyed with, for example, MCrAlY, wherein M is Ni (see, rejection above). McMordie has further taught wherein the metal based alloy includes a nickel-based alloy (see, for example, col 1 lines 48 - 55). With regard to the limitations of the jacketing powder, the examiner has rejected the parent claim (claim 15 / 23) along the “(b)" path which does not require jacketing as claim 15 lists the two (a and b) in the alternative only (and claim 23 specifically requires the b path), and these dependant claims have not explicitly required the metal powder to be the “a” alternative, then the claims as written would only further limit the "a" path, so rejections made according to the "b" path of claim 15 would satisfy the remaining limitation of claims 18 and 33.

10. Claim 19: McMordie in view of Alperine have taught the method of claim 15, wherein a Pt-group metal is alloyed with, for example, MCrAlY, wherein M is Co (see,

rejection above). McMordie has further taught wherein the metal based alloy includes a cobalt based alloy (see, for example, col 1 lines 48 - 55). With regard to the limitations of the jacketing powder, the examiner has rejected the parent claim (claim 15) along the "(b)" path which does not require jacketing as claim 15 lists the two (a and b) in the alternative only, and this dependant claim has not explicitly required the metal powder to be the "a" alternative, then the claim as written would only further limit the "a" path, so rejections made according to the "b" path of claim 15 would satisfy the remaining limitation of claim 19.

11. Claim 24: McMordie in view of Alperine has taught the method of claim 15, wherein the metal powder is platinum rich, and as a Pt-Ni alloy powder (See, rejection of claim 15 above). As the alloy is a two component powder, and taught to be platinum rich, the examiner interprets this to mean >50% wt Pt. Further, Alperine has taught using Pt-Ni-Al alloys in molar ratios of 20-80 Pt, 0-20 Ni, and 20 to 80% Al. Although McMordie in view of Alperine do not explicitly teach wherein the metal powder is formed as a metal powder alloy having 65 wt.% to 86 wt.% platinum and 35 wt.% to 15 wt% nickel, it would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated a composition within the claimed range since in the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976)

12. Claim 25: McMordie in view of Alperine teach the method of claim 15 wherein the metal powder also includes at least aluminum (the metal powder has been taught as a Pt-MCrAlY alloy which includes aluminum (Al)) (see, rejection of claim 15 above).

13. Claims 27 and 28: McMordie in view of Alperine teach the method of claim 15 (described above) wherein McMordie has taught the platinum containing layer as possessing a thickness of about 1 to 2 microns or about 3 to 5 microns thick (see, for example, col 7 lines 13 - 17, so the grain size distribution has must be below these thickness values). Further Alperine has taught that it is important to use fine grain sizes as the grain size of coating layer helps limit the roughness of the final surface texture of the coating and limits the size of the residual porosities in the final coating (see, for example, col 6 liens 10 - 17). Neither McMordie nor Alperine explicitly teach the metal powder has a grain size distribution of 0.01 to 5 micron, further 0.2 to 0.5 micron, but it would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated a grain size distribution within the claim ranges since in the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a *prima facie* case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976), and since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

14. Claims 20 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over McMordie in view of Alperine as applied to claim 15 above, and further in view of Rafferty et al (US patent 5,997,604; hereafter Rafferty).

15. Claim 20: McMordie in view of Alperine teach the method of claim 15, wherein a Pt-group metal is alloyed with, for example, MCrAlY, wherein M is Fe (see, rejection above); wherein both McMordie and Alperine have taught methods of enhancing the oxidation and corrosion resistance of metallic superalloy substrates, such as nickel and cobalt based superalloys (see, for example, abstract and col 1 lines 47 - 57 of McMordie; abstract and col 5 lines 44 - 51 of Alperine). Neither has explicitly taught wherein the metal-based alloy includes an iron material. Rafferty teaches a method of enhancing the corrosion resistance of metallic alloy and superalloy substrates, including iron-based (stainless steel) and nickel and cobalt based superalloys for high temperature jet engine applications (see, for example, abstract, col 1 lines 1 – 10, and col 2 lines 8 – 20). Rafferty further teaches that all of these types of alloys are frequently coated with corrosion resistance materials (See, for example, col 1 lines 1 - 9). As both Rafferty and McMordie in view of Alperine have taught corrosion resistant coatings designed to protect metal alloys being used in high temperature engine applications, it would have been obvious to one of ordinary skill in the art at the time of invention to have applied the protective coating of McMordie and Alperine onto an iron-containing metal since Rafferty has taught that iron based metals are known to be used in the same applications, and are frequently coated with similar protective coatings to enhance their high temperature performance. With regard to the limitations of the

jacketing powder, the examiner has rejected the parent claim (claim 15) along the “(b)" path which does not require jacketing as claim 15 lists the two (a and b) in the alternative only, and this dependant claim has not explicitly required the metal powder to be the “a” alternative, then the claim as written would only further limit the "a" path, so rejections made according to the "b" path of claim 15 would satisfy the remaining limitations of claim 20.

16. Claim 26: McMordie in view of Alperine teach the method of claim 15 (described above) wherein both McMordie and Alperine have taught methods of enhancing the oxidation and corrosion resistance of metallic superalloy substrates, comprising applying coatings comprising platinum, base metal-alloys, and aluminum to form protective barrier coatings (see, for example, abstracts of McMordie and Alperine). Alperine has further taught introducing the MCrAlY alloy separately (at distinct time periods) or together (as alloyed) with a platinum alloy (see, for example, col 4 line 30 – col 5 line 10, and col 7 lines 55 – 67), but either has explicitly taught wherein the slip comprising the binder and the metal powder further includes an MCrAlY powder. Rafferty teaches a method of enhancing the corrosion resistance of metallic alloy and superalloy substrates for high temperature jet engine applications (see, for example, abstract, col 1 lines 1 – 10, and col 2 lines 8 – 20). The method of Rafferty similarly employs using platinum alloys alone or mixed with MCrAlY powders to form the protective coatings (see, for example, col 2 lines 35 – 48, line 4 line 55 - col 5 line 7). As both Rafferty and McMordie in view of Alperine have taught corrosion resistant coatings designed to protect metal alloys being used in high temperature engine

applications, it would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated the platinum group metal powder with an MCrAlY powder in the slip as the chemistries had been previously taught to be predictably used together by Alperine, and since Rafferty has further taught that a corrosion resistant coating for protecting superalloys can be predictably formed by combining the these two species as powders in a slurry.

17. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over McMordie in view of Alperine as applied to claim 15 above, and further in view of Rafferty and Wilson (US patent 4,214,042; hereafter Wilson).

18. Claim 32: McMordie in view of Alperine teach the method of claim 15, wherein a Pt-group metal is alloyed with, for example, MCrAlY, (see, rejection above); wherein both McMordie and Alperine have taught methods of enhancing the oxidation and corrosion resistance of metallic superalloy substrates, such as nickel and cobalt based superalloys (see, for example, abstract and col 1 lines 47 - 57 of McMordie; abstract and col 5 lines 44 - 51 of Alperine). Neither has explicitly taught wherein the metal-based alloy includes a titanium based alloy, nor have they explicitly taught wherein metal based powder alloy further includes titanium. Rafferty teaches a method of enhancing the corrosion resistance of metallic alloy and superalloy substrates, including titanium-based and nickel and cobalt based superalloys for high temperature jet engine applications (see, for example, abstract, col 1 lines 1 – 10, and col 2 lines 8 – 20). Rafferty further teaches that all of these types of alloys are frequently coated with

corrosion resistance materials (See, for example, col 1 lines 1 - 9). As both Rafferty and McMordie in view of Alperine have taught corrosion resistant coatings designed to protect metal alloys being used in high temperature engine applications, it would have been obvious to one of ordinary skill in the art at the time of invention to have applied the protective coating of McMordie and Alperine onto a titanium-based alloy since Rafferty has taught that titanium based metal alloys are known to be used in the same applications, and are frequently coated with similar protective coatings to enhance their high temperature performance.

19. McMordie in view of Alperine and Rafferty have taught applying a powdered Pt-group metal alloyed with, for example, MCrAlY, do not explicitly teach wherein applied metal based powder alloy further includes titanium. Wilson teaches a method of applying MCrAlY coatings for corrosion resistance, and further teaches it is known in the art to include 1 to 12 weight % of titanium in the MCrAlY coating to improve hot corrosion resistance. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to have further incorporated titanium into the powdered Pt-group metal –MCrAlY alloy powder taught in the method of McMordie in view of Alperine and Rafferty in order to improve the corrosion resistance of the resulting coating.

20. With regard to the limitations of the jacketing powder, the examiner has rejected the parent claim (claim 15) along the “(b)" path which does not require jacketing as claim 15 lists the two (a and b) in the alternative only, and this dependant claim has not explicitly required the metal powder to be the “a” alternative, then the remaining claim

limitations as written would only further limit the "a" path, so rejections made according to the "b" path of claim 15 would satisfy the remaining limitations of claim 32.

21.

22. Claims 15 – 19, 21-22, 25, and 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over McMordie in view of Alperine and Mackiw et al (US patent 2,853,403; hereafter Mackiw).

23. Claim 15-17, and 29: McMordie teaches a method of enhancing the oxidation and corrosion resistance of superalloy substrates which includes enriching the surface of the superalloy substrate with platinum and subsequently aluminizing the platinum enhanced superalloy substrate (See, for example, abstract). McMordie has taught the substrates intended to receive the protective coatings are superalloys such as nickel based and cobalt based superalloys for service in gas turbine engines (See, for example, col 1 lines 1 - 57). McMordie further teaches making available a slip material that includes at least one metal powder, the metal powder including up to at least 25 wt % of at least one metal of the platinum group formed of a metal powder alloy that includes the at least one metal of the platinum group (see, for example, preparing the platinum based coating via a slurry comprising a platinum-rich alloy powder (see, for example, col 7 lines 21 – 28; wherein the examiner interprets "platinum rich" to be >50%).

24. McMordie further teaches that applying the slip material at least from area to area onto the component part while forming a slip layer (see, for example, col 7 lines 20

- 28, wherein the platinum containing coating is formed by slurry deposition onto the substrate),

25. curing an drying the slip layer and heat treating the component part that is coated with the slip material at least from area to area to diffuse the slip layer into the component part (see, for example, wherein the deposited platinum layer is taught to commonly be exposed to heat at above about 1000^{o}C for about 20 min, col 7 lines 17 – 28, wherein the examiner asserts that the temperature and times involved in this heat treatment process would be sufficient to cure and dry the slip layer).

26. McMordie has not explicitly taught incorporating a binder into the platinum rich alloy coating slurry, but McMordie has taught binders as conventional components of slurries with regard to other coating systems, and has even provided a number of preferred binder species to be used due to their beneficial properties (see, for example, col 7 line 29 - 40, and col 8 lines 28 - 59). Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated a binder into the platinum rich alloy coating slurry of McMordie since binders are common rheology and strength altering additives in slurry systems and they are well recognized to be included into slurry coatings by McMordie.

27. McMordie has taught nickel based superalloy substrates (see, for example, abstract) and has broadly taught the metal powder as a platinum-rich alloy (see, for example, col 7 lines 22-28), but is silent as to the other alloying element(s) involved in the platinum-rich alloy. So McMordie does not explicitly teach the metal powder alloy that further includes at least one material having the same base metal as the metal-

based alloy. When a primary reference is silent as to a certain detail, one of ordinary skill would be motivated to consult a secondary reference which satisfies the deficiencies of the primary reference. Alperine teaches a method for improving the oxidation and corrosion resistance for superalloy substrates used in high temperature turbine applications (see, for example, abstract, col 1 lines 1 – 37); which involves enriching the surface of the superalloy substrate with platinum, via a platinum alloy, and aluminizing the platinum enhanced superalloy substrate (see, for example, col 4 lines 30 – 63, and col 5 lines 1 – 10). Alperine teaches wherein the platinum group alloy for achieving platinum enhancement is predictably a platinum group - nickel alloy (such as palladium-nickel alloy) (see, for example, col 6 lines 64 - 67) or can be achieved by alloying a platinum group metal with an MCrAlY alloy (see, for example, col 7 line 57 - col 8 line 13; wherein M is the base metal such as Ni, Co, or Fe, and the platinum group is between 2 and 60% by weight). Alperine further teaches wherein platinum group metal, palladium is known in the art to similarly reap the benefits achieved by platinum with respect to high temperature oxidation and corrosion resistance (see, for example, col 2 lines 38 – 40). As both McMordie and Alperine have taught methods of enhancing the oxidation and corrosion resistance of superalloy substrates which includes enriching the surface of the superalloy substrate with platinum and aluminizing the platinum enhanced superalloy substrate, it would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated platinum group-nickel alloys or platinum group – MCrAlY alloys as such platinum rich alloys would achieve the predictable result of enhancing the substrate with a platinum group element to enhance oxidation and

corrosion resistance. Alperine further teaches that the addition of platinum group metal alloys can be achieved in various ways by any known means in the powder metallurgy art, such as they can be achieved via alloys comprising core metal alloys coated with an outer metal alloy to form a core-jacketed alloy (See, for example, col 7 line 60 - col 8 line 14). Alperine has only explicitly taught an MCrAlY (wherein M corresponds to base metals such as Co or Ni, pg 5 col 60-61) core with a platinum group metal coating, so McMordie in view of Alperine does not explicitly teach platinum group-metal core with a jacketing formed of a material having a same base metal as the metal based-alloy. Mackiw teaches a method of forming core-jacketed metal alloy powders (see, for example, col 1 lines 1 – 26). Mackiw further teaches that is it known in the art to jacket platinum group metal cores with metals comprising nickel or cobalt (see, for example, col 2 lines 13 – 40). As Alperine has taught that the addition of platinum group metal alloys can be achieved by any known means in the powder metallurgy art, such as core-shell alloys, and Mackiw has taught for platinum to predictably reside are a core forming metal in core-shell alloys, it would have been obvious to one of ordinary skill in the art at the time of invention to have formed pt-group metal cores jacketed by a material having a same base metal as the metal-based alloy (such as Ni or Co alone or within the MCrAlY alloy) as such means would provide an art recognized and predictable means to supply the addition of one or more platinum group - alloyed metals.

28. Claims 18-19: McMordie in view of Alperine and Mackiw have taught the method of claim 15 above wherein the metal based alloy includes a nickel-based or cobalt

based alloys, and the jacketing is Ni or Co alone, or within the MCrAlY alloy (See rejection of claim 15 above).

29. Claims 21 and 22: McMordie in view of Alperine and Mackiw has taught the method of claim 15, wherein the metal powder is platinum rich, and as a Pt-Ni alloy powder (Pt core-Ni jacketing) (See, rejection of claim 15 above). As the alloy is a two component powder, and taught to be platinum rich, the examiner interprets this to mean >50% wt Pt. Mackiw has further taught wherein the desired ratio of the respective metals in the desired composite metal can be obtained very easily by controlling the jacketing thickness (amount of jacketing deposited) (see, for example, col 3 lines 5 – 37). Although McMordie in view of Alperine and Mackiw do not explicitly teach wherein the metal powder is formed as a metal powder alloy core having 65 wt.% to 85 wt.% platinum and a jacketing thickness generating a 35 wt.% to 15 wt% nickel, it would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated a composition within the claimed range since in the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976)

30. Claim 25: McMordie in view of Alperine and Mackiw teach the method of claim 15 wherein the metal powder also includes at least aluminum (the metal powder has been taught as a Pt-MCrAlY alloy which includes aluminum (Al)) (see, rejection of claim 15 above).

31. Claims 27 and 28: McMordie in view of Alperine and Mackiw teach the method of claim 15 (described above) wherein McMordie has taught the platinum containing layer

as possessing a thickness of about 1 to 2 microns or about 3 to 5 microns thick (see, for example, col 7 lines 13 - 17, so the grain size distribution has must be below these thickness values). Further Alperine has taught that it is important to use fine grain sizes as the grain size of coating layer helps limit the roughness of the final surface texture of the coating and limits the size of the residual porosities in the final coating (see, for example, col 6 liens 10 - 17). None of McMordie, Alperine, nor Mackiw explicitly teach the metal powder has a grain size distribution of 0.01 to 5 micron, further 0.2 to 0.5 micron, but it would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated a grain size distribution within the claim ranges since in the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976), and since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

32. Claims 20, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over McMordie in view of Alperine and Mackiw as applied to claim 15 above, and further in view of Rafferty et al (US patent 5,997,604; hereafter Rafferty).

33. Claim 20: McMordie in view of Alperine and Mackiw teach the method of claim 15, wherein a Pt-group metal is jacketed with, for example, MCrAlY, wherein M is Fe (see, rejection above); wherein both McMordie and Alperine have taught methods of

enhancing the oxidation and corrosion resistance of metallic superalloy substrates, such as nickel and cobalt based superalloys (see, for example, abstract and col 1 lines 47 - 57 of McMordie; abstract and col 5 lines 44 - 51 of Alperine). None of McMordie, Alperine, or Mackiw has explicitly taught wherein the metal-based alloy includes an iron material. Rafferty teaches a method of enhancing the corrosion resistance of metallic alloy and superalloy substrates, including iron-containing (stainless steel) and nickel and cobalt based superalloys for high temperature jet engine applications (see, for example, abstract, col 1 lines 1 – 10, and col 2 lines 8 – 20). Rafferty further teaches that all of these types of alloys are frequently coated with corrosion resistance materials (See, for example, col 1 lines 1 - 9). As both Rafferty and McMordie in view of Alperine and Mackiw have taught corrosion resistant coatings designed to protect metal alloys being used in high temperature engine applications, it would have been obvious to one of ordinary skill in the art at the time of invention to have applied the protective coating of McMordie and Alperine and Mackiw onto an iron-based metal since Rafferty has taught that iron based metals are known to be used in the same applications, and are frequently coated with similar protective coatings to enhance their high temperature performance. McMordie in view of Alperine, Mackiw, and Rafferty have taught the method of claim 15 above wherein the metal based alloy includes a iron based alloys, and the jacketing has been taught as an MCrAlY alloy (where M is taught as Fe) (See rejection of claim 15 above).

34. Claim 26: McMordie in view of Alperine and Mackiw teach the method of claim 15 (described above) wherein both McMordie and Alperine have taught methods of

enhancing the oxidation and corrosion resistance of metallic superalloy substrates, comprising applying coatings comprising platinum, base metal-alloys, and aluminum to form protective barrier coatings (see, for example, abstracts of McMordie and Alperine). Alperine has further taught introducing the MCrAlY alloy separately (at distinct time periods) or together (as alloyed) with a platinum alloy (see, for example, col 4 line 30 – col 5 line 10, and col 7 lines 55 – 67), but either has explicitly taught wherein the slip comprising the binder and the metal powder further includes an MCrAlY powder. Rafferty teaches a method of enhancing the corrosion resistance of metallic alloy and superalloy substrates for high temperature jet engine applications (see, for example, abstract, col 1 lines 1 – 10, and col 2 lines 8 – 20). The method of Rafferty similarly employs using platinum alloys alone or mixed with MCrAlY powders to form the protective coatings (see, for example, col 2 lines 35 – 48, line 4 line 55 - col 5 line 7). As both Rafferty and McMordie in view of Alperine and Mackiw have taught corrosion resistant coatings designed to protect metal alloys being used in high temperature engine applications, it would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated the platinum group metal powder with an MCrAlY powder in the slip as the chemistries had been previously taught to be predictably used together by Alperine, and since Rafferty has further taught that a corrosion resistant coating for protecting superalloys can be predictably formed by combining the these two species as powders in a slurry.

Response to Arguments

35. Applicant's arguments filed 6/10/10 have been fully considered but they are not persuasive.

36. Applicant's arguments that "McMordie et al describes a method in which a platinum layer is deposited on a nickel alloy substrate, and then a slurry of aluminum powder and silicon powder or an aluminum-silicon alloy powder is applied to the substrate and the substrate is heat treated", and "the aluminum powder (which is applied as a slurry) can only be applied after the platinum has been deposited, not together as a MCrAlY alloy" (pg 6-7), and therefore would not meet the one step limitation of claim 15. The examiner agrees that a platinum-containing layer and aluminum / silicon layers are applied separately according to McMordie; however, the examiner has not relied upon the additional aluminum / silicon slurry coatings in this or previous rejections. McMordie teaches applying the a platinum-containing layer by slurry coating using "a platinum alloy powder" (see, for example, col 7 lines 22-28); the combination of Alperine as described previously and above is directed to the remaining alloying elements with the platinum in this platinum rich alloy power of the slurry applied platinum containing layer. Although additional coatings (such as aluminum slurry coating) are be taught by McMordie following the application of the platinum-containing coating, such additional coatings are not impeded from being applied, and can very much still be applied following the application of a slurried Pt-MCrAlY alloy coating. Further applying such subsequent coatings are not excluded by the claims as currently presented.

37. In response to applicant's arguments against the references individually (i.e. Alperine's "palladium-nickel alloy Is not a metal powder"), one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The use of slurry coating metal powders has been taught by primary reference McMordie (See, for example, col 7 lines 23-28).

38. As to the dependent claims, they remain rejected as no separate arguments are provided.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NATHAN H. EMPIE whose telephone number is (571)270-1886. The examiner can normally be reached on M-F, 6:45- 4:15 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on (571) 272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/N. H. E./
Examiner, Art Unit 1712

/Michael Cleveland/
Supervisory Patent Examiner, Art Unit 1712